

1 2. (Once amended) A method of fabricating a flash memory device as recited in claim 1,
2 wherein said step of forming a common source region on said substrate includes the steps of
3 patterning a photoresist disposed over said substrate to substantially define said
4 predefined area at which the common source region is to be formed;
5 implanting ions into said substrate to form said common source region using said
6 patterned photoresist as an implant mask; and
7 removing said patterned photoresist.

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1 3. (Once amended) A method of fabricating a flash memory device as recited in claim 2,
2 wherein said ions implanted to form said common source region include arsenic ions.

1 4. (Once amended) A method of fabricating a flash memory device as recited in claim 1,
2 wherein said step of forming a common source region includes the steps of
3 forming a sacrificial oxide layer over said top surface of said substrate;
4 patterning a photoresist disposed over said substrate to substantially define said
5 predefined area at which the common source region is to be formed;
6 implanting ions into said substrate to form said common source region using said
7 patterned photoresist as an implant mask; and
8 removing said patterned photoresist and said sacrificial oxide layer.

1 5. (Once amended) A method of fabricating a flash memory device as recited in claim 1,
2 wherein said step of implanting ions includes the steps of
3 forming a tunneling oxide layer over each said top surface area of said substrate;
4 depositing a first polysilicon layer over said tunneling oxide layer;
5 depositing a nitride masking layer over said first polysilicon layer;
6 patterning and etching said nitride masking layer to expose first and second portions of
7 said first polysilicon layer, said exposed first and second portions substantially defining first and
8 second floating gate regions; and
9 implanting ions into said first and second floating gate regions to adjust said threshold
10 voltage; and
11 wherein the forming of said pair of floating gates includes the steps of

12 forming a floating gate oxide layer over said first and second exposed portions of said
13 first polysilicon layer;
14 removing said nitride masking layer;
15 etching said first polysilicon layer and said tunneling oxide layer using said floating gate
16 oxide layer as a mask leaving remaining portions of said first polysilicon layer and said tunneling
17 oxide layer disposed beneath said floating gate oxide layer, and exposing a portion of said
18 substrate, said remaining portions of said first polysilicon layer forming first and second floating
19 gates associated with each said cell, said floating gates having side walls and a portion which
20 overlies a portion of said common source region thereby providing a high coupling ratio for the
21 associated cell.

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1 6. (Once amended) A method of fabricating a flash memory device as recited in claim 5,
2 wherein said step of forming said select gates includes the steps of
3 forming an insulating layer over the exposed portion of said substrate and the floating
4 gate oxide layer covering said floating gates;
5 forming a second polysilicon layer over said insulating layer;
6 forming a conductive layer over said second polysilicon layer; and
7 removing portions of said conductive layer, said second polysilicon layer, and said
8 insulating layer to form said select gates.

1 7. (Once amended) A method of fabricating a flash memory device as recited in claim 6,
2 wherein said step of forming an insulating layer over said exposed portion of said substrate and
3 said floating gate oxide layer covering said floating gates includes the steps of
4 forming a first gate oxide layer over said exposed portion of said substrate, over said
5 floating gate oxide layer, and over said floating gates;
6 forming a nitride layer over said first oxide layer;
7 performing an etching process to remove a portion of said nitride layer and leaving
8 nitride spacers adjacent said side walls of each of said floating gates; and
9 forming a second gate oxide layer over said first oxide layer, over said nitride spacers and
10 over said floating gate oxide layer.

1 8. (Not amended) A method of fabricating a flash memory device as recited in claim 6, wherein
2 said conductive layer includes tungsten.

1 9. (Not amended) A method of fabricating a flash memory device as recited in claim 1, wherein
2 said ions includes Boron ions.

1 10. (Once amended) A method of fabricating a flash memory device as recited in claim 6,
2 wherein said step of forming drain regions associated with each cell includes the steps of
3 patterning and etching said conductive layer and portions of said substrate to substantially
4 define the boundaries of drain areas of said substrate; and
5 implanting ions into said drain areas to form said drain regions.

1 11. (Once amended) A method of fabricating a flash memory device as recited in claim 4,
2 wherein said step of implanting said ions into said substrate to form said common source region
3 includes:
4 implanting arsenic ions to provide a dopant density in the range of $1 \times 10^{14}/\text{cm}^2$ to $5 \times$
5 $10^{14}/\text{cm}^2$ and at an energy range of 80 to 150 KeV.

1 12. (Once amended) A method of fabricating a flash memory device as recited in claim 5,
2 wherein said step of depositing a first polysilicon layer over said tunneling oxide layer includes:
3 depositing polysilicon upon said tunneling at a temperature of approximately 620 degrees
4 C in order to form said first polysilicon layer having a thickness in the range of 500 to 2500
5 angstroms.

1 13. (Not amended) A method of fabricating a flash memory device as recited in claim 12,
2 wherein said first polysilicon layer includes SiH4.

1 14. (Once amended) A method of fabricating a flash memory device having a high coupling
2 ratio, comprising the steps of
3 providing a silicon substrate having a top surface;
4 forming a sacrificial oxide layer over said top surface of said substrate;

5 patterning a photoresist layer disposed over said sacrificial oxide layer to substantially
6 define a source region of the substrate;
7 implanting first ions into said substrate to form a common source region of said substrate
8 using the patterned photoresist layer as an implant mask;
9 removing said patterned photoresist layer and said sacrificial oxide layer to expose said
10 top surface of said substrate;
11 forming a tunneling oxide layer over the exposed top surface of said substrate;
12 depositing a first polysilicon layer over said tunneling oxide layer;
13 depositing a nitride masking layer over said first polysilicon layer;
14 patterning and etching said nitride masking layer to expose at least one first portion and
15 at least one second portion of said first polysilicon layer, said first and second exposed portions
16 substantially defining first and second floating gate regions;
17 implanting second ions into portions of said substrate defined by said first and second
18 floating gate regions and including opposite extremities of said common source region, in order
19 to adjust the threshold voltage of the flash memory device;
20 forming a floating gate oxide layer over said first and second exposed portions of said
21 first polysilicon layer;
22 removing said nitride masking layer;
23 etching said first polysilicon layer and said tunneling oxide layer using said floating gate
24 oxide layer as a mask leaving remaining portions of said first polysilicon layer and said tunneling
25 oxide layer disposed beneath said floating gate oxide layer, and exposing a portion of said
26 substrate, each said remaining portion of said first polysilicon layer forming a floating gate
27 having side walls, having a portion which overlies a portion of said common source region there
28 by providing a high coupling ratio for an associated cell;
29 forming a first gate oxide layer over said exposed portion of said substrate, over said
30 floating gate oxide layer, and over said floating gates;
31 forming a nitride layer over said first oxide layer;
32 performing an etching process to remove a portion of said nitride layer and leaving
33 nitride spacers adjacent said side walls of each of said floating gates;
34 forming a second gate oxide layer over said first oxide layer, over said nitride spacers and
35 over said floating gate oxide layer

36 forming a second polysilicon layer over said second gate oxide layer;
37 forming a conductive layer over said second polysilicon layer;
38 removing portions of said conductive layer, said second polysilicon layer, said second
39 gate oxide layer, said nitride spacers and said first gate oxide layer to form a plurality of select
40 gates each having a portion overlying a portion of an associated one of said floating gates; and
41 patterning and etching said conductive layer to expose portions of said substrate to
42 substantially define the boundaries of at least one drain area of said substrate; and
43 implanting third ions into said drain area of said substrate to form at least one drain
44 region.

1 [Cancel claim 15 without prejudice.]

1 16. (Once amended) A method of fabricating a flash memory device as recited in claim 14,
2 wherein said first ions include N-type ions and said additional ions include P-type ions, whereby
3 threshold voltage of the flash memory device is adjusted.